

## Course Structure for Integrated / Honors Geography 2022 Onwards

Semester	Course Code	Nature	Course Title	L	T	P	Credits
1 <sup>st</sup>	IG-GEO-22-C-101	Core	Physical Geography and Cartography-I	04	-	02	06
	IG-GEO-22-C-102	Core	Human Geography and Cartography-II	04	-	02	06
	IG-GEO-22-G-101	GE	Elements of Physical Geography and Cartography-I	04	-	02	06
	IG-GEO-22-A-101	AECC	Communicative English-I	-	-	-	02
	IG-GEO-22-A-102	AECC	Environmental Science-I	-	-	-	02
<b>Total Credits</b>						<b>22</b>	

Semester	Course Code	Nature	Course Title	L	T	P	Credits
2 <sup>nd</sup>	IG-GEO-22-C-201	Core	Geomorphology & Surveying-I	04	-	02	06
	IG-GEO-22-C-202	Core	Economic Geography & Quantitative Techniques-I	04	-	02	06
	IG-GEO-22-G-201	GE	Introductory Climatology & Cartography-II	04	-	02	06
	IG-GEO-22-A-201	AECC	Communicative English-II	-	-	-	02
	IG-GEO-22-A-202	AECC	Environmental Science-II	-	-	-	02
<b>Total Credits</b>						<b>22</b>	

Semester	Course Code	Nature	Course Title	L	T	P	Credits
<b>3<sup>rd</sup></b>	IG-GEO-22-C-301	Core	Climatology & Surveying-II	04	-	02	06
	IG-GEO-22-C-302	Core	Evolution of Geographic Thought	04	02	-	06
	IG-GEO-22-C-303	Core	Population Geography & Quantitative Techniques-II	04	-	02	06
	IG-GEO-22-G-301	GE	Basic Hydrology and Oceanography	04	02	-	06
	IG-GEO-22-S-301	SEC	Surveying	-	-	04	04
<b>Total Credits</b>				<b>28</b>			

Semester	Course Code	Nature	Course Title	L	T	P	Credits
<b>4<sup>th</sup></b>	IG-GEO-22-C-401	Core	Hydrology and Oceanography	04	02	-	06
	IG-GEO-22-C-402	Core	Remote Sensing	04	-	02	06
	IG-GEO-22-C-403	Core	Biogeography and Map Projection-I	04	-	02	06
	IG-GEO-22-G-401	GE	Geography of India and Quantitative Techniques	04	-	02	06
	IG-GEO-22-S-401	SEC	Quantitative Techniques	-	-	4	4
<b>Total Credits</b>				<b>28</b>			

Semester	Course Code	Nature	Course Title	L	T	P	Credits
<b>5<sup>th</sup></b>	IG-GEO-22-C-501	Core	World Regional Geography & Map Projection-II	04	-	02	06
	IG-GEO-22-C-502	Core	Geography of India and Field Tour Report	04	-	02	06
	IG-GEO-22-E-501	DSE*	Introduction to Disaster Management	04	02	-	06
	IG-GEO-22-E-502	DSE*	Geography of Tourism	04	02	-	06
	IG-GEO-22-E-503	DSE*	Regional Planning and Development	04	02	-	06
<b>Total Credits</b>				<b>24</b>			

Semester	Course Code	Nature	Course Title	L	T	P	Credits
<b>6<sup>th</sup></b>	IG-GEO-22-C-601	Core	Geography of J&K and GIS	04	-	02	06
	IG-GEO-22-C-602	Core	Political Geography	04	02	-	06
	IG-GEO-22-E-601	DSE*	Disaster Profile of India	04	-	02	06
	IG-GEO-22-E-602	DSE*	Urban Geography	04	02	-	06
	IG-GEO-22-E-603	DSE*	Social and Cultural Geography	04	02	-	06
<b>Total Credits</b>				<b>24</b>			

*\*Note: For 5<sup>th</sup> & 6<sup>th</sup> Semester, students shall opt 02 DSE papers out of 03 in each semester.*

*Dean Social Science*



## Physical Geography & Cartography-I

**Course Outcome:** The course has been designed to provide learners an understanding of Physical Geography – theories and process in geomorphology and the evolution of landforms in various environmental settings. The lesson students able to hone their scientific understanding, illustration, skill and developed themselves as self- confident covered learner in the field of landforms study.

The students will be able to identify, describe, create, construct and prepare different cartographic features such as maps, scales, relief and will be adept of conduct survey.

### Credit I

1. Introduction to Geography
2. Physical Geography and its various branches
3. Introduction to Solar system - Structure and Characteristics
4. Origin of Earth - Nebular Hypothesis & Big Bang Theory

### Credit II

1. Earth Dynamics – Endogenic & Exogenic forces
2. Concept of Space - Location on Earth
3. Spatial referencing system (Lat -Long., UTM)
4. Earth's surface features (1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> order landforms).

### Credit III

1. Earth's Interior - Approaches and Sources of Study).
2. Internal Structure of Earth - Layers and their Characteristics.
3. Rocks: Definition and Characteristics
4. Classification of Rocks – Origin, Rock Cycle.

### Credit IV

1. Earth Movements - Folds and their Types
2. Faults and their Types
3. Earthquakes – Causes, Classification & Distribution.
4. Volcano – Concept, Classification & Distribution.

### Suggested Readings:

1. D.S. Lal, *Physical Geography*, Sharda Pustak Bhawan, 2009.
2. Singh Savindra, *Physical Geography*, Prayag Pustak Bhawan, 2000.
3. Majid Husain, *Physical Geography*, Anmol Publications Pvt. Ltd, 2007.
4. S.A. Qazi, *Principles of Physical Geography*, AHP Publishing Co. 2004.
5. Satopa Mukherjee, *Understanding Physical Geography*, Oriental Longman 2002.
6. A.H. Strahler & A.N. Strahler, *Modern Physical Geography*, John Wiley & Sons, Inc., 2001.



## Cartography-I (Practical)

### Credit - I

1. Cartography-Definition and Scope
2. Maps – Definition and Essentials; Classification of Maps
3. Scale – Definition and Importance; Ways of expressing scales.
4. Construction of Scales – Plain, Diagonal and Comparative scale.

### Credit: 2

1. Relief representation
2. Contours – Definition, Importance and Drawing of Contours.
3. Representation of different types of Land forms – U shaped and V shaped valleys, conical hill, plateau, ridge, Slope.
4. *One Day Geomorphic Field Trip & Report Writing.*

### Suggested Readings:

1. *Robinson, A.H et al., Elements of Cartography, John Wiley & Sons, U.S.A., 1995.*
2. *Sarkar, A.K., Practical Geography- A Systematic Approach, orient Longman, Calcutta, 1997.*
3. *Singh, R.L. and Dutt, P.K.: Elements of Practical Geography Kalyani Publishers, New Delhi.*
4. *Gopal Singh, Map World and Practical Geography, Vikas Publishing House 2000.*
5. *Khullar, D.R., Essentials of Practical Geography, New Academic Publishing Co., Jalandhar, 2013.*





## Human Geography & Cartography-II

**Course Outcome:** The expected learning outcome would be; the student will be able to understand, identify and describe social, cultural and economic dynamics of society. The individuals will be able to identify, describe, create, construct and prepare different cartographic features such as maps, scales, relief and will be adept of conduct survey.

### Credit I

1. Introduction to Human Geography
2. Evolution of Human Geography – Major milestones
3. Branches of Human Geography
4. Approaches to Human Geography – Determinism and Possibilism & Neo- Determinism.

### Credit II

1. Human adaptation to Environment – Eskimos, Gujjars & Bakarwals.
2. Races – Concept, Classification and Distribution
3. Major Religions and their Spatial Distribution
4. Major Languages and their Spatial Distribution

### Credit III

1. Population: Growth and Density
2. Population Dynamics – fertility, mortality and migration.
3. Population structure (Age, sex and occupation)
4. Factors of population distribution (Physical, socio-economic and demographic)

### Credit IV

1. Resources - Concept and Classification
2. Sustainable Development.
3. Land Degradation - Causes and Consequences
4. Population & Resources – Optimum, Over & Under Population.

### Suggested Readings

1. *Bebbig, H.J., Human Geography: Culture, Society and Space, John Wiley, New York, 1996.*
2. *Singh, K.N., People of India, An Introduction, Seagul Book, 1992.*
3. *Spate O.H.K, People of India, An Introduction, Seagul Books, 1992.*
4. *Majid Hussain, Human Geography, Rawat Publications 1994*
5. *L. N. Verma, Urban Geography, Rawat Publications 2006*
6. *Grish Chopra, Economic Geography, Commonwealth 2006*
7. *T. C. Sharma, Economic Geography of India, Rawat Publications 2013*
8. *R. K. Jain, A Textbook of Population Studies, Astha Publishers and Distributors 2014*
9. *Hans Raj, Fundamentals of Demography, Surjeet Publications.*



## Cartography- II (Practical)

### Credit: I

1. Cartographic representation of data - point, line and polygon symbols.
2. Spatial and non-spatial data.
3. Isopleths & Choropleths.
4. Chorochromatic maps.

### Credit: II

1. Choroschematic and dot maps.
2. Representation Climatic Data – Hythergraph, Climograph.
3. One day Socio-economic field survey & Report Writing.

### Suggested Readings:

1. Robinson, A.H et al., *Elements of Cartography*, John Wiley & Sons, U.S.A., 1995.
2. Sarkar, A.K., *Practical Geography: A Systematic Approach*, Oriental Longman, Calcutta, 1997.
3. Singh, R.L and Dutt, P.K., *Elements of Practical Geography*, Kalyani Publishers New Delhi, 1979.
4. Gopal Singh, *Map World and Practical Geography*, Vikas Publishing House, 2000.
5. Khullar, D. R., *Essentials of Practical Geography*, New Academic Publishing Co., Jalandhar, 2013.

KNOWLEDGE ENLIGHTENS



## *Title: Elements of Physical Geography*

**Course Outcome:** The course has been designed to provide learners an understanding of Physical Geography - theories and process in geomorphology and the evolution of landforms in various environmental settings. The lesson students able to hone their scientific understanding, illustration, skill and developed themselves as self- confident coveted learner in the field of landforms study. The individuals will be able to identify, describe, create, construct and prepare different cartographic features such as maps, scales, relief and will be adept of conduct survey.

### **Credit I**

1. Physical Geography and its various branches
2. Structure of Earth's interior- Seismographic evidence and analysis
3. Continental Drift Theory- Wegener's concept
4. Sea floor spreading and Plate Tectonics-Geometry of Plates

### **Credit II**

1. Rocks: major classification, origin and general characteristics
2. Weathering: factors, types and effects
3. Soil: process of formation, major types and distribution (ICAR Classification)
4. Landforms and their formation : fluvial, Aeolian and glacial

### **Credit III**

1. Composition and Structure of atmosphere
2. Insolation: factors, global heat budget
3. Atmospheric pressure, Winds: major classification (planetary, periodic and local).
4. Cyclones and anti-cyclones

### **Credit IV**

1. Surface configuration of ocean floors
2. Temperature and Salinity: horizontal and vertical distribution
3. Coral reefs: origin, types and distribution
4. Movement in ocean waters- tides, waves and currents (Concept)

### **Suggested Readings**

1. Singh, S.: *Geomorphology*, Prayag Pustakalaya, Allahabad, 1998.
2. Sparks, B.N.: *Geomorphology*, Prayag Pustakalaya, Allahabad, 1998
3. D. S. Lal, *Physical Geography*, Sharda Pustak Bhawan, 2009
4. Savindra Singh, *Physical Geography*, Prayag Pustak Bhawan, 2000
5. Majid Hussain, *Physical Geography*, Anmol Publications Pvt. Ltd., 2007
6. S. A. Qazi, *Principals of Physical Geography*, AHP Publishing Co. 2004
7. Satopa Mukherjee, *Understanding Physical Geography*, Oriental Longman 2002
8. A. H. Strahler & A. N. Strahler, *Modern Physical Geography*, John Willy & sons, Inc. 2001.
9. Barry, R. G & Chorley, R.J., *Atmosphere, Weather and Climate* Routledge, 1998.
10. Critchfield, H, *General Climatology*, Prentice Hall, New York, 1975.
11. Stringer, E.T *Foundation of Climatology*, Surjeet Publication, Delhi, 1982.
12. Grald, S, *General Oceanography- An Introduction*, John Wiley & Sons, New York, 1980.
13. King, C.A.M., *Oceanography for Geographers*, E Arnold, London, 1975.
14. Paul R, Pinet, *Oceanography*, Jones and Bartellett Publishers, 1998





## Cartography-I (Practical)

### Credit: I

1. Cartography - Definition and Scope
2. Maps - Definition and Essentials.
3. Classification of Maps
4. Scale - Definition and Importance.

### Credit: 2

1. Relief Representation
2. Contours - Definition, Importance and Drawing of Contours
3. Representation of different types of Land forms - U Shaped and V Shaped Valleys, Conical hill, Plateau, Ridge & Slope.

### Suggested Readings:

1. *Robinson, A.H et al., Elements of Cartography, John Wiley & Sons, U.S.A., 1995.*
2. *Sarkar, A.K., Practical Geography- A Systematic Approach, orient Longman, Calcutta, 1997.*
3. *Singh, R.L. and Dutt, P.K.: Elements of Practical Geography Kalyani Publishers, New Delhi.*
4. *Gopal Singh, Map World and Practical Geography, Vikas Publishing House 2000.*
5. *Khullar, D.R., Essentials of Practical Geography, New Academic Publishing Co., Jalandhar, 2013.*





## Geomorphology & Surveying-I

**Course Outcome:** The course has been designed to provide learners an understanding of fundamental principles, theories and process in geomorphology and the evolution of landforms in various environmental settings. The individuals will be able to identify, describe, create, construct and prepare different cartographic features such as maps, scales, relief and will be adept of conduct survey.

### Credit: I

1. Nature and scope of Geomorphology
2. Principles of Geological time scale
3. Geological time scale- Tabular form
4. Fundamental concepts- Uniformitarianism, Order of Superposition.

### Credit: II

1. Isostasy – Pratt’s and Airy’s concept
2. Continental drift theory by Wagner.
3. Plate tectonics
4. Sea floor Spreading.

### Credit: III

1. Denudation & its Agents, Land sculpturing
2. Weathering and Erosion – Their types
3. Models of landform development-Davis and Penck
4. Rejuvenation Process.

### Credit: IV

1. Fluvial processes and resultant land forms
2. Glacial processes and resultant land forms
3. Aeolian processes and resultant land forms
4. Karst processes and resultant land forms

### Suggested Readings:

1. Singh, S., *Geomorphology*, Prayag Pustakalaya, Allahabad, 1998.
2. Sparks, B.N., *Geomorphology*, Prayag Pustakalaya, Allahabad, 1998
3. Dayal, P., *A Textbook of Geomorphology*, Rajesh Publications.
4. Tarbuck, Earth- *An Introduction to Physical Geology*, Pearson.
5. Bloom, A. L., *Geomorphology*, Rawat Publications.
6. Chorley, R.J., *Geomorphology*, Routledge.
7. Steers, J. A., *The Unstable Earth*, M.W Books.
8. Siddharta. K., *The Earth’s Dynamic Surface- A book of Geomorphology*, Kitab Mahal.



## Surveying- I (Practical)

### Credit: I

1. Field surveying: introduction, classification and types
2. Plane table survey: accessories, procedure and precautions
3. Plane table survey: radiation, intersection and resection methods (actual field survey)

### Credit: II

1. Introduction of General Topographic sheets of Survey of India
2. Interpretation of General Topographic sheets: relief, drainage, settlement and communication
3. One day Geomorphic Field Trip and Report.

### Suggested Readings:

1. Robinson, A.H et al., *Elements of Cartography*, John Wiley & Sons, U.S.A., 1995.
2. Sarkar, A.K., *Practical Geography: A Systematic Approach*, Oriental Longman, Calcutta, 1997.
3. Singh, R.L and Dutt, P.K., *Elements of Practical Geography*, Kalyani Publishers New Delhi, 1979.
4. Gopal Singh, *Map World and Practical Geography*, Vikas Publishing House 2000.
5. Kali Charan Sahu, *Textbook of Remote Sensing and Geographic Information System*, Atlantic Publishers and Distributors 2008.

KNOWLEDGE ENLIGHTENS



## Economic Geography & Quantitative Techniques-I

**Course Outcome:** The course aims at providing students with tools, models and methods which are useful in understanding economic phenomenon with reference to the changing geographical attributes. At the end of the course, the students will be able to identify and measure factors responsible for establishment and localization of industry at national and global level. This will make students able to determine basic quantitative data, techniques and its appropriate uses in geographical studies.

### Credit: I

1. Introduction to Economic Geography
2. Basis for classification of economic activities
3. Characteristics of Primary, Secondary & Tertiary Activities
4. Factors of Location of Economic Activities

### Credit: II

1. Factors of Industrial location
2. Classification of Industries
3. Agro based Industries - Cotton Textile (India and USA)
4. Metal based Industries - Iron & steel (India and Japan)

### Credit: III

1. Concept and types of Region
2. Weber's Theory of Industrial location
3. Industrial regionalization – Major Industrial Regions of India
4. Introduction to Regional economic forums – EU, ASEAN, SAARC, BRICS

### Credit: IV

1. Liberalization and Privatization
2. Globalization & its Impact on Indian Economy
3. Concept of Knowledge economy
4. Green Revolution: Concept and Impacts

### Suggested Readings:

1. Coe, N., Kelly, P., and Yeung, H. (2007) *Economic Geography: A Contemporary Introduction*, London: John Wiley & Sons
2. Leyshon, A., Lee, R., McDowell, L and Sunley, P. (eds) (2011) *The Sage Handbook of Economic Geography*, London: Sage
3. Aoyama, Y., Murphy, J., and Hanson, S. (2010) *Key Concepts in Economic Geography*, London: Sage
4. Clark, G., Gertler, M. and Feldman, M.(eds) (2003) *The Oxford Handbook of Economic Geography*, Oxford: Oxford University Press
5. *Economic Geography of India* by T. C Sharma
6. *Economic Geography* by Majid Hussain
7. *Economic Geography* By Prithwish Kumar Roy



## Quantitative Techniques-I (Practical)

### Credit: I

1. Data- Sources and Types
2. Classification and Tabulation of Data
3. Representation of Geographic data- Statistical diagrams (Bar Diagram, Histogram, Frequency Polygon, Ogive, Pie Diagram)
4. Climatic Diagrams- Climograph, Hythergraph, Ergograph.

### Credit: II

1. Measures of Central Tendency- Mean, Median, Mode
2. Measures of Dispersion- Mean Deviation, Quartile Deviation and Standard Deviation
3. Measures of Skewness & Kurtosis
4. Measures of inequality – Scatter Diagram.

### Suggested Readings:

1. Pal, S.K., *Statistics for Geographers- Techniques and Applications*, Concept, New Delhi, 1998.
2. Jones, P.A., *Fieldwork in Geography*, Longman, 1968.
3. Khan, Z.A., *Text Book of Practical Geography*. Concept publications, New Delhi, 1963.
4. Singh, R.L. and Dutt, P.K.: *Elements of Practical Geography* Kalyani Publishers, New Delhi.
5. Ashis Sarkar, *Quantitative Geography- Techniques and Presentation*, Oriental Blackswan 2013
6. Khan, Z.A., *Text Book of Practical Geography*, Concept, New Delhi, 1998.
7. Monkhouse, F.J. & Wilkinson, H.R., *maps and Diagrams*, Mthuen, London, 1994.
8. Sarkar, A.K., *Practical Geography- A Systematic Approach*, orient Longman, Calcutta, 1997.
9. Singh, R.L., *Elements of Practical Geography*, Kalyani Pub, New Delhi.
10. L. R. Singh, *Fundamentals of Practical Geography*, Sharda Pustak Bhawan 2006.
11. Gopal Singh, *Map World and Practical Geography*, Vikas Publishing House 2000

KNOWLEDGE ENLIGHTENS



## Introductory Climatology and Cartography-II

**Course Outcome:** *The course is aimed to broaden the understanding of basic concepts of climatology and its geographical significance along with knowledge of earth's atmosphere with respect to structure, composition and distribution of temperature over earth surface. At the end of course, the students will be having a fair knowledge about elements and factors influencing climate of a region. The individuals will be able to identify, describe, create, construct and prepare different cartographic features such as maps, scales, relief and will be adept of conduct survey.*

### Credit: I

1. Concepts of Climatology and Meteorology.
2. Elements of Weather & Climate.
3. Insolation and its determinants
4. Global heat balance/budget

### Credit II

1. Composition of Atmosphere.
2. Structure of Atmosphere.
3. Process of Heating and Cooling of Atmosphere.
4. Green House Effect.

### Credit III

1. Atmospheric pressure.
2. Pressure belts of World.
3. Winds and their Classification
4. Atmospheric disturbances – Tropical and Temperate Cyclones

### Credit IV

1. Air Masses & its Types.
2. Fronts & its types.
3. Precipitation – Forms and Types
4. Global distribution of Precipitation

### Suggested Readings

1. Critchfield, H.J., *General Climatology*, Pearson Publications.
2. Lal, D.S., *Climatology*, Sharda Pustak Bhavan.
3. Siddartha, K., *Climatology-Atmosphere, Weather and Climate*, Kitab Mahal Publications.
4. Singh Savindra, *Climatology*, Pravalika Publications.
5. Anandeshvari Awasthi, *Climatology*, APH Publishing Corporation.



## Cartography-II (Practical)

### Credit I

1. Isopleths.
2. Choropleths.
3. Chorochromatic Maps.
4. Choroschematic and Dot Maps

### Credit II

1. Representation of Climatic Data - Climograph, Hythergraph, Ergograph.

### Suggested Readings

1. *Robinson, A.H et al., Elements of Cartography, John Wiley & Sons, U.S.A., 1995.*
2. *Sarkar, A.K., Practical Geography - A Systematic Approach, orient Longman, Calcutta, 1997.*
3. *Singh, R.L. and Dutt, P.K.: Elements of Practical Geography Kalyani Publishers, New Delhi.*
4. *Gopal Singh, Map World and Practical Geography, Vikas Publishing House 2000.*
5. *Khullar, D.R., Essentials of Practical Geography, New Academic Publishing Co., Jalandhar, 2013.*





## Climatology and Surveying-II

**Course Outcome:** The course is aimed to broaden the understanding of basic concepts of climatology and its geographical significance along with knowledge of earth's atmosphere with respect to structure, composition and distribution of temperature over earth surface. At the end of course, the students will be having a fair knowledge about elements and factors influencing climate of a region. The individuals will be able to identify, describe, create, construct and prepare different cartographic features such as maps, scales, relief and will be adept of conduct survey.

### Credit: I

1. Introduction to Climatology
2. Weather and Climate.
3. Evolution of Earth's Atmosphere.
4. Composition of Atmosphere & Structure of Atmosphere.

### Credit II

1. Insolation and its Determinants
2. Global Heat Balance/Budget
3. Process of Heating and Cooling of Atmosphere, Horizontal and Vertical distribution of temperature.
4. Humidity – Definition and Types

### Credit III

1. Atmospheric pressure and pressure belts
2. Global Circulation System
3. Winds and their Classification
4. Atmospheric disturbances – Tropical and Temperate Cyclones

### Credit IV

1. Air Masses – Origin & Classification.
2. Fronts: Source Regions, Types and Associated Weather
3. Precipitation-Forms and Types
4. Global distribution of Precipitation

### Suggested Readings:

1. Critchfield, H.J., *General Climatology*, Pearson Publications.
2. Lal, D.S., *Climatology*, Sharda Pustak Bhavan.
3. Lutgens, textbook and Tasa., *the Atmosphere*, Pearson.
4. Siddartha, K., *Climatology-Atmosphere, Weather and Climate*, Kitab Mahal Publications.
5. Singh Savindra, *Climatology*, Pravalika Publications
6. Anandeshvari Awasthi, *Climatology*, APH Publishing Corporation.
7. Aguado.E, Burt, J., *Understanding Weather and Climate*, Pearson, 2015.
8. Hartmann, D.L, *Global Physical Climatology*, Elsevier Science, 2015.





## Surveying-II (Practical)

### Credit I

1. Prismatic Compass Surveying
2. Dumpy level Surveying

### Credit II

1. Introduction to GPS (Point, Line & Polygon creation).
2. Introduction to Total Station – An Overview.
3. One day Field Survey and Report Writing

### Suggested Readings:

1. Robinson, A.H et al., *Elements of Cartography*, John Wiley & Sons, U.S.A., 1995.
2. Sarkar, A.K., *Practical Geography- A Systematic Approach*, orient Longman, Calcutta, 1997.
3. Singh, R.L. and Dutt, P.K.: *Elements of Practical Geography* Kalyani Publishers, New Delhi.
4. Gopal Singh, *Map World and Practical Geography*, Vikas Publishing House 2000.
5. Basak, N, *Surveying and Leveling*, McGraw Hill, 1994.
6. Roy, S.K., *Fundamentals of Surveying*, PHI Learning, 2004.



## Evolution of Geographic Thought

*Course Outcome: The course provides a broad overview of the development of geographical thought. It appreciates the diverse subject matter of Geography which has incorporated and developed theories and ideas from interdisciplinary contexts and also focuses on the evaluation of core elements which make up geographical thought and how these have emerged as a result of debate, controversy and innovations in geographical research. The course aims to enable the learners to evaluate and articulate the strengths and weaknesses in the philosophical basis of Geographical research and also equip them with the abilities to formulate and articulate their own perspectives on issues related to thought and practice in geography.*

### Credit I

1. Changing Nature of Geography
2. Basic Concepts: Areal Differentiation and Spatial Organization
3. Contribution of Greeks – Thales, Anaximander, Hecataeus, Eratosthenes, Herodotus
4. Contribution of Romans in Geography – Strabo, Ptolemy

### Credit II

1. Dualism & Dichotomy in Geography
  - a) Physical/Human
  - b) Regional/General
  - c) Historical/Contemporary
2. Dark Age and its Impact.
3. Contribution of Arabs (Al – Biruni, Al – Masudi, Ibn Battuta).
4. Contribution of Indians in Geography (Ancient Period).

### Credit III

1. Determinism & Neo – Determinism
2. Possibilism
3. Positivism & Radicalism
4. Behavioristic & Humanistic Approach

### Credit IV

1. Quantitative Revolution – its Impact and Relevance.
2. Manual to Digital Transition – Digital Cartography
3. Remote Sensing.
4. Introduction to GIS.

### Credit V

Tutorial on

1. Greek Geographers
2. Approaches to Study of man-Environment Relationship

### Credit VI

Tutorial on

1. Roman Geographers
2. Recent Trends in Geography

### Suggested Readings:

1. Dikshit R D, *Geographical Thought; A Contextual History of Ideas*. Prentice Hall, India, New Delhi, 2000.
2. Hartshorne, Richard, *Perspectives on the Nature of Geography*, Rand McNally and Co., Chicago. 1959.
3. Harvey, David, *Explanation in Geography*, Edward- Arnold London, 1972.
4. Husain, Majid, *evolution of Geographical Thought*, Rawat Publications, Jaipur, 1984.
5. James, P.E., *All Possible World: A History of Geographical Ideas*, Sachin Publications, Jaipur, 1980.
6. Rana, L., *Geographic Thought*, Concept Publishing House.
7. Adhikari, S, *Fundamentals of Geographic Thought*, Orient Swan, 2015.
8. Maurya, S. D., *history of Geographical Thought*, Pravalika Publications, 2013.



## Population Geography & Quantitative Techniques-II

**Course Outcome:** The course is meant to provide an understanding of spatial and structural dimensions of population and the emerging issues. The course is further aimed at familiarizing the students with global and regional level problems and also equips them for comprehending the Indian situation. The course is aimed to introduce the foundational skills of how to generate and display the quantitative and qualitative spatial and non-spatial data to solve Earth and Space science problems, and how to gain an appreciation for the processes that operate at these spatio-temporal scales.

### Credit I

1. Nature, Scope and Development of Population Geography.
2. Sources and Types of Population Data, Census, Survey and Vital Registration System
3. Population Growth Theories- Malthus
4. Demographic Transition Theory

### Credit II

1. World Population Growth: Prehistoric to Modern
2. Fertility and Mortality Analysis- Indices and Determinants.
3. Concepts of Over Population, Under Population and Optimum Population.
4. Ackerman's Population Resource Regions.

### Credit III

1. Migration Concept & Types.
2. Patterns of Migration
3. Causes and Consequences of Migration
4. Theories and Models of Migration
  - a) Ravenstein's Laws of Migration
  - b) Zelinsky's Mobility Transition Model
  - c) Lee's Intervening Obstacles Model

### Credit IV

1. Nature and Scope of Settlement Geography
2. Evolution of Human Settlements
3. Human Settlements- Site and Situation.
4. Human Settlements- Patterns and Forms

### Suggested Readings:

1. R. K. Jain, *A Textbook of Population Studies*, Astha Publishers and Distributors, 2014.
2. Hans Raj, *Fundamentals of Demography*, Surjeet Publications.
3. Peters, Plarkin, *Population Geography: Problems, Concepts, Prospects*, Kendall Hut Publishing, 1979.
4. Hasan, I, *Population Geography*, Rawat Publications., 2006.
5. Chandna, R, *Geography of Population, Concept, Determinants, Patterns*, Kalyani Publications.
6. Kayasthi, S.L., *Geography of Population*, Rawat Publications, 1998.

## Quantitative Techniques-II (Practical)

### Credit I

1. Correlation & its Types
2. Karl Pearson Correlation Coefficient
3. Spearman's rank Correlation
4. Multiple and Partial Correlation.

### Credit II

1. Sampling – Concept.
2. Random Sampling
3. Stratified Sampling
4. Systematic Sampling
5. Cluster Sampling

### Suggested Readings:

1. Pal, S.K., *Statistics for Geographers- Techniques and Applications*, Concept, New Delhi, 1998.
2. Jones, P. A., *Fieldwork in Geography*, Longman, 1968.
3. Khan, Z. A., *Text Book of Practical Geography*, Concept Publications, New Delhi, 1963.
4. Sarkar, A.K., *Practical Geography- A Systematic Approach*, orient Longman, Calcutta, 1997.
5. Singh, R.L. and Dutt, P.K.: *Elements of Practical Geography* Kalyani Publishers, New Delhi.
6. Khan, Z. A., *Text Book of Practical Geography*, Concept Publications, New Delhi, 1998.
7. Monkhouse' F.J. & Wilkinson, H.R., *Maps and Diagrams*, Mithuen, London, 1994.
8. Sarkar, A.K., *Practical Geography, A Systematic Approach*, Orient Longman, Calcutta, 1997.
9. L. R. Singh, *Fundamentals of Practical Geography*, Sharda Pustak Bhawan 2006.
10. Gopal Singh, *Map World and Practical Geography*, Vikas Publishing House 2000.
11. D. N. Elhance, V. Elhance & B. M. Aggarwal, *Fundamentals of Statistics*, Kitab Mahal 2008.



## Basic Hydrology and Oceanography

*Course Outcome: The objective of the course is to give an overview of the science of oceanography and to identify reasons why sustainable practices regarding ocean resources are important. The students will analyse atmospheric and oceanic circulation systems as well as their interconnections and driving forces and the principles involved in the generation of waves and tides and evaluate their effects on coastal processes and marine ecosystems. At the end of the course, the students will assess the consequences of rise in sea-level on the coastal zone and society and possible mitigation and adaptation strategies and can pursue career/ research opportunities in this applied field.*

### Credit I

1. Introduction to Hydrology
2. Forms and occurrence of water on Land
3. Hydrological cycle
4. Concept and Importance of Ground water

### Credit II

1. Watershed concept
2. Watershed as planning unit.
3. Rainwater Harvesting.
4. Water degradation – Causes.

### Credit III

1. Introduction to Oceanography
2. Temperature of Ocean Water
3. Salinity of Ocean Water
4. Tides and their types

### Credit IV

1. Surface configuration of ocean floor- Continental shelf and slope, Abyssal Plains, Mid Oceanic Ridges and Oceanic Trenches
2. Coral reefs- development and distribution
3. El-Nino-Concept and Impact
4. Biological Resources of Oceans.

### Credit V

Tutorial on Hydrology

1. Water Scarcity and Conservation Strategies in Kashmir Himalayas

### Credit II

Tutorial on Oceanography

1. Resource Potential of Oceans.

### Suggested Readings

1. Grald, S, *General Oceanography- An Introduction*, John Wiley & Sons, New York, 1980.
2. King, C.A.M., *Oceanography for Geographers*, E Arnold, London, 1975.
3. Paul R, Pinet, *Oceanography*, Jones and Bartelett Publishers, 1998
4. Davie, T, *Fundamentals of Hydrology*, Routledge, 2003
5. Singh, S, *Fundamentals of Hydrology*, Pravalika Publications
6. Ragunath, *Hydrology*, New Age International, 2015
7. Manning, *Applied Principles of Hydrology*, CBS, 2007
8. Trijillo, Thurman, *Essentials of Oceanography*, Pearson.



## Surveying

**Course Outcome:** The main objectives of this course is aimed at making the students to know about the significance of advanced surveying in field measurements in terms of utility and precision of data collection and to learn on the principles of Electronic distance measurements, GPS and their accuracy. The course enables the students to know in detail the concepts of coordinate systems, Map projections, GPS, its working principles, data collection, data processing and analysis.

### Credit II

1. Field Surveying: Introduction & Classification.
2. Plane Table Survey: Accessories, Procedure and Precautions

### Credit II

1. Plane table survey
2. Radiation Method
3. Intersection Method

### Credit III

1. Introduction to General Topographic Sheets of Survey of India
2. Interpretation of General Topographic sheets: Relief, Drainage, Settlements.

### Credit IV

1. Area Measurement (Plane Table Survey)
2. GPS Surveying
3. One day field Survey and Report Writing

### Suggested Readings

1. Robinson, A.H et al., *Elements of Cartography*, John Wiley & Sons, U.S.A., 1995.
2. Sarkar, A.K., *Practical Geography: A Systematic Approach*, Oriental Longman, Calcutta, 1997.
3. Singh, R.L and Dutt, P.K., *Elements of Practical Geography*, Kalyani Publishers New Delhi, 1979.
4. Gopal Singh, *Map World and Practical Geography*, Vikas Publishing House 2000.
5. Kali Charan Sahu, *Textbook of Remote Sensing and Geographic Information System*, Atlantic Publishers and Distributors 2008.
6. Basak, N, *Surveying and Levelling*, McGraw Hill, 1994.
7. Roy, S.K., *Fundamentals of Surveying*, PHI Learning, 2004

KNOWLEDGE ENLIGHTENS



## Hydrology and Oceanography

**Course Outcome:** The objective of the course is to give an overview of the science of oceanography and to identify reasons why sustainable practices regarding ocean resources are important. The students will analyse atmospheric and oceanic circulation systems as well as their interconnections and driving forces and the principles involved in the generation of waves and tides and evaluate their effects on coastal processes and marine ecosystems. At the end of the course, the students will assess the consequences of rise in sea-level on the coastal zone and society and possible mitigation and adaptation strategies and can pursue career/ research opportunities in this applied field.

### Credit I

1. Introduction to Hydrology
2. Forms and occurrence of water on Land
3. Hydrological cycle
4. Concept and Importance of Ground water

### Credit II

1. Watershed concept
2. Drainage Pattern & its types.
3. Drainage Morphometry – Ordering , Density and Bifurcation ratio
4. Horton's Scheme of Morphometric analysis

### Credit III

1. Introduction to Oceanography
2. Physical properties of sea water: temperature and salinity
3. Ocean currents- origin and types
4. Tides and their types

### Credit IV

1. Surface configuration of ocean floor
2. Coral reefs- development and distribution
3. El-Nino and LA Nina - Concept and Impact
4. Resource Potential of Oceans

### Credit V

Tutorial on Hydrology

1. Field visit to nearby street for morphometric analysis.

### Credit VI

Tutorial on Oceanography

1. El-Nino and LA Nina – and its Impact on western disturbances.

### Suggested Readings

1. Grald, S, *General Oceanography- An Introduction*, John Wiley & Sons, New York, 1980.
2. King, C.A.M., *Oceanography for Geographers*, E Arnold, London, 1975.
3. Paul R, Pinet, *Oceanography*, Jones and Bartlett Publishers, 1998
4. Davie, T, *Fundamentals of Hydrology*, Routledge, 2003
5. Singh, S, *Fundamentals of Hydrology*, Pravalika Publications
6. Ragunath, *Hydrology*, New Age International, 2015
7. Manning, *Applied Principles of Hydrology*, CBS, 2007
8. Trijillo, Thurman, *Essentials of Oceanography*, Pearson



## Remote Sensing

**Course Outcome:** Students will acquire knowledge regarding the use of modern tools and technology like RS, GIS and GPS in geographical studies and can apply this knowledge in any field of study. The Students can acquire a broad knowledge regarding natural resources, various sensors and can developed idea about aerial photographs, satellite imagery etc. Through this course students can develop their base regarding the practical use of advanced technology in different field of geography through which they can prepare more accurate and precise maps of different cultural and physical features.

### Credit I

1. Concepts and Overview of Remote Sensing
2. Electromagnetic Spectrum(EMS)
3. Interactions of EMR with atmosphere and earth's surface features
4. Important satellite systems; LANDSAT and IRS.

### Credit II

1. Sensors and their Types
2. Sensor resolution (Spatial, spectral, temporal and radiometric),
3. Types and characteristics of aerial photographs
4. Types and characteristics of satellite images

### Credit III

1. Elements of visual image interpretation: Importance and Factors
2. Use of ancillary information for satellite data interpretation.
3. Digital Image Interpretation
4. Ground Truth: Importance and methods.

### Credit IV

1. Introduction to Digital Image processing(DIP)
2. Image statistics; histogram and scatterplots.
3. Geometric and Radiometric distortions.
4. Image enhancements and classification

### Books recommended:

1. Lillesand, T., Kiefer, R. W. & Chipman, J. 2014. *Remote sensing and image interpretation*. John Wiley & Sons.
2. Emilio C. 2016. *Fundamentals of Satellite Remote Sensing: An Environmental Approach*, CRC Press
3. Jensen, J. R. 1996. *Introductory digital image processing: a remote sensing perspective (No. Ed. 2)*. Prentice-Hall Inc.
4. Qihao W. 2017. *Advances in Environmental Remote Sensing*, CRC Press.
5. *Principles of remote sensing. A handbook from ITC Netherlands*, available at: [http://www.itc.nl/library/papers\\_2009/general/PrinciplesRemoteSensing.pdf](http://www.itc.nl/library/papers_2009/general/PrinciplesRemoteSensing.pdf)
6. Ormeling, F., & Kraak, M. J. 2010. *Cartography: Visualization of Geospatial Data*. Prentice Hall.
7. Robinson, Arthur H., Joel L. Morrison, Phillip C. Muehrcke, A. Jon Kimerling, and Stephen C. Guptill 1995. *Elements of Cartography*, John Wiley and Sons, New York





## Remote Sensing (Practical)

### Credit I: Google Earth Pro

1. Google Earth Pro, Navigation, digitization, Symbology, saving and Exporting digitized data, downloading USGS toposheets & Saving Google Earth Imageries
2. Area and linear calculation, Historical Imagery,

### Credit II: Image Web Portals

1. ISRO Bhuvan Portal, over view, downloading different data
2. Earth Explorer: Downloading Landsat Imageries, DEM, MODIS Data, Sentinel data





## Biogeography and Map Projections –I

**Course Outcome:** The focus of this paper is to study the intricate relationship between geography and biology. It also broadens the understanding about Biodiversity, its conservation and management. This course also provides a deep understanding about various factors which influence the distribution and dispersal of species. It also enables the students to understand by geographic template and patterns along with biodiversity gradients across the globe. The individuals will be able to identify, describe, create and construct different map projections.

### Credit I

1. Meaning and Scope of Biogeography
2. Biosphere: Definition, Nature and Composition
3. Geographical factors affecting Flora and Fauna.
4. Biogeographic pattern – cosmopolitanism and endemism

### Credit II

1. Soil as an Ecological factor
2. Soil forming factors, Soil components and soil properties
3. Soil profile and Horizon
4. Soil Erosion and Conservation

### Credit III

1. Ecosystem: Meaning, Types and Functions
2. Ecosystem – Components
3. Ecosystem – Energy and material transfer
4. Major biomes of the world

### Credit IV

1. Forest conservation in India
2. Wildlife Conservation in India
3. Biodiversity- Concept ,Types and Importance
4. Biodiversity hotspots (with special reference to India)

### Suggested Readings:

1. E.O. Wilson and R. H Macarther., *The Theory of Island Biogeography*, Princeton University Press, 1976.
2. James Brown., *Biogeography – An Ecological and Evolutionary Approach*, Sinauer Associates Inc; 3rd edition, 2005.
3. 2005.
4. M.V Limolinov, & B. R. Riddle, *Biogeography*, Sinauer Associates Inc. Massachusetts USA, 2005.

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## Map Projections –I (Practical)

### Credit I

- 1) Map Projection and its Significance
- 2) Classification of Map Projection
- 3) Simple Cylindrical Projection (Min. 2 exercises)
- 4) Cylindrical Equal Area Projection (Min. 2 exercises)

### Credit II

- 1) Conical Projection (Min. 2 exercises)
- 2) Zenithal Equal Area Projections (Min. 2 exercises)
- 3) Equidistant Map Projection (Min. 2 exercises)
- 4) Mercator's Projection (Min. 2 exercises)

### Suggested Readings:

1. Robinson, A.H et al., *Elements of Cartography*, John Wiley & Sons, U.S.A., 1995.
2. Sarkar, A.K., *Practical Geography: A Systematic Approach*, Oriental Longman, Calcutta, 1997.
3. Singh, R.L and Dutt, P.K., *Elements of Practical Geography*, Kalyani Publishers New Delhi, 1979.
4. Gopal Singh, *Map World and Practical Geography*, Vikas Publishing House, 2000.
5. Khullar, D.R., *Essentials of Practical Geography*, New Academic Publishing Co., Jalandhar, 2013.





## Quantitative Techniques

**Course Outcome:** The course is aimed to introduce the foundational skills of how to generate and display the quantitative and qualitative spatial and non-spatial data to solve Earth and Space science problems, and how to gain an appreciation for the processes that operate at these spatio-temporal scales. The students will develop hands on computer algorithms and digital image processing techniques. The course will help the students to identify the specific data and methodologies for effective mapping and evaluation of natural resources. Moreover, the application of geospatial technologies for hazard mitigation and management is the core concern of the curriculum.

### Credit: I

1. Data- Sources and Types
2. Classification and Tabulation of Data
3. Representation of Geographic data – Statistical diagrams (Bar Diagram, Histogram, Frequency Polygon, Ogive, Pie Diagram)

### Credit: II

1. Measures of Central Tendency- Mean, Median, Mode.
2. Measures of Dispersion- Mean Deviation and Standard Deviation

### Credit III

1. Correlation analysis
2. Spearman's rank correlation

### Credit IV

1. Sampling – Concept
2. Sampling- Types
  - a) Random Sampling
  - b) Stratified Sampling
  - c) Systematic Sampling

### Suggested Readings

1. Pal, S.K., *Statistics for Geographers- Techniques and Applications*, Concept, New Delhi, 1998.
2. Jones, P .A., *Fieldwork in Geography*, Longman, 1968.
3. Khan, Z.A., *Text Book of Practical Geography*. Concept publications, New Delhi, 1963.
4. Singh, R.L. and Dutt, P.K.: *Elements of Practical Geography* Kalyani Publishers, New Delhi.
5. Ashis Sarkar, *Quantitative Geography- Techniques and Presentation*, Oriental Blackswan 2013.
6. Khan. Z.A., *text Book of Practical Geography*, Concept, New Delhi, 1998.
7. Monkhouse, F.J. & Wilkinson, H.R., *maps and Diaghrams*, Mthuen, London, 1994.
8. Sarkar ,A.K., *Practical Geography- A Systematic Approach*, orient Longman, Calcutta, 1997.
9. Singh,R.L.,*Elements of Practical Geography*, Kalyani Pub, New Delhi.
10. L. R. Singh, *Fundamentals of Practical Geography*, Sharda Pustak Bhawan 2006.
11. Gopal Singh, *Map World and Practical Geography*, Vikas Publishing House 2000.



**Title: Geography of India & Quantitative Techniques**

**Course Outcome:** The main objective of this course is aimed at making the students to gain In-depth knowledge of physiography, climate, demography natural vegetation, agriculture energy resources and industries of India. It also broadens understanding of students with respect social, cultural and ethno-linguistic profile of India. This course has been conceptualized to address the requirements of a large segment of students interested in various competitive examinations. Students will acquire knowledge regarding the use of modern tools and technology like remote sensing in geographical studies and can apply this knowledge in any field of study. The Students can acquire a broad knowledge regarding natural resources, various sensors and can developed idea about aerial photographs, satellite imagery etc. Through this course students can develop their base regarding the practical use of advanced technology in different field of geography through which they can prepare more accurate and precise maps of different cultural and physical features.

**Credit: I:**

1. Land: Physical Divisions
2. Drainage Systems of India.
3. Climate: General Climatic Conditions and Seasonal Variations in India
4. Monsoons: Theories and role of Jet streams

**Credit: II**

1. Soil: Types and Distribution
2. Land Resources and Utilization
3. Characteristics of Indian Agriculture
4. Distribution and Production of Crops: Rice, Wheat & Sugarcane

**Credit: III**

1. Distribution and production: Iron Ore, Coal and Petroleum in India
2. Cotton Textiles Industry – Distribution & production.
3. Iron and Steel Industry – Distribution & production
4. Fertilizer Industry – Distribution & production

**Credit: IV**

1. Physical Divisions of J&K.
2. Drainage system of J&K.
3. Climate of J&K.
4. Agriculture with special reference to Horticulture and Saffron (J&K)

**Suggested Readings:**

1. Drew, F. K., *The territories of India, Kashmir State. Standard Press London. 1979*
2. *Gazetter of Kashmir and Ladakh. (1890) Reprint (1974)*
3. Lawrence, S.W. *The Valley of Kashmir, Oxford University Press. 1895*
4. Raina, A.N. *Geography of Jammu and Kashmir. National Book Trust, New Delhi, 1971.*
5. Spate, O.H.K., *India and Pakistan, Mac Millan & Co. 1967.*
6. Singh, R.L., *India, Regional Geography, Banarus Hindu University, 1987*
7. Qazi, S.A., *Geography of India with special reference to J&K State, APH Publishing Co. 2000.*
8. Majid Hussain, *Systematic Geography of Jammu and Kashmir, Rawat Publications 2000*
9. R. L. Singh, *India- A Regional Geography, National Geographical Society of India 2003*
10. Chandra Vijay Purty, *Geography of India, ABD Publishers.*
11. Majid Hussain, *Geography of India, 2nd Ed. Tata Mcgraw Hill, 2011*
12. D.R Khullar, *India- A Comprehensive Geography, Kalyani publishers, New Delhi, 2011.*
13. Husain M., *Geography of India, Mc Graw Hill Publications, U.P., 2017.*
14. Kaul A. K., *Studies In Geography of Jammu & Kashmir, Rawat Publications, Jaipur 2014.*
15. Husain M., *Indian & World Geography, McGraw Hills, 2011.*



## Quantitative Techniques (Practical)

### Credit: I

1. Data- Sources and Types
2. Classification and Tabulation of Data
3. Representation of Geographic data- Statistical diagrams (Bar Diagram, Histogram, Frequency Polygon, Ogive, Pie Diagram)

### Credit: II

1. Measures of Central Tendency- Mean, Median, Mode
2. Measures of Dispersion- Mean Deviation
3. Standard Deviation and Coefficient of variation

### Suggested Readings:

1. Archer, J.E and Dalton, T. H., *Field Work in Geography*, E. T. Bastsford Ltd., London, 1968.
2. Ishtiaq, M., *A text Book of Practical Geography*, Heritage Publishing House, New Delhi, 1989.
3. Johnston, R. J., *Multivariate Statistics in Geography*. Longman, London, 1978.
4. Jones, P. A., *Field work in Geography*, Longman, London, 1968.
5. Keates, J. S., *Cartographic Design and Production*, Longman, London, 1973.
6. Mishra, R. P. & Ramesh, A., *Fundamentals of Cartography*, Concept Publishing Company, New Delhi, 1969.
7. Monkhouse, F. J., *Maps and Diagrams*, Methuen & Co., London, 1967.
8. Nayer, N. B., *Encyclopedia of Surveying, Maps and Remote Sensing*, Rawat Publishers, New Delhi, 1996.
9. Sarkar, A., *Practical Geography*, Sangam Books, New Delhi, 1997.
10. Singh, L.R., *Elements of Practical Geography*, Kalyani Publishers, New Delhi, 1997.
11. Summer, G., *Mathematics for Physical Geographers*, 1978.
12. Yeats, M. H., *An Introduction to Quantitative Analysis in Human Geography*, 1974.

KNOWLEDGE ENLIGHTENS



## World Regional Geography & Map Projection-II

**Course Outcome:** This course aims to promote a broad understanding of landforms, climate and drainage patterns at global level. It also deals with global distribution of industry, minerals, and agricultural and population resource regions. This course has been conceptualized to address the requirements of a large segment of students interested in various competitive examinations. The individuals will be able to identify, describe, create, and construct different map projections.

### Credit – I Asia

1. Asia in the context of World- Relief and Drainage.
2. Climate of Asia
3. Case study of South – East Asia with special reference to Plantation Agriculture.
4. West Asia: Petroleum Resources

### Credit – II Europe

1. Europe: Relief and Drainage
2. Climate of Europe
3. Case study of Denmark with special reference to Dairy Farming.
4. Western Europe: Industrial Setup (Germany, France and U.K)

### Credit – III Africa

1. Africa: Relief and Drainage.
2. Climate of Africa.
3. Case study of south Africa with special reference to minerals.
4. Natural Resources of Congo basin

### Credit – IV Australia

1. Australia: Relief and Drainage
2. Climate of Australia
3. Case study of Anna Creek Station
4. Physiography of New Zealand

### Suggested Readings:

1. Clark, Earl & Daniel Rockman Bergsmark., *Modern World Geography*, J.B. Lippincott Company, 2009.
2. Bradley, John Hudgon., *World Geography*; Gin & Co.
3. Gautam, Alka., *Regional Geography of the World*, 2018
4. Khullar, D. R., *World Geography*, Access Publishing, 2016.
5. Kumar, Mahesh., *World Geography*, Cosmos Publications, 2020
6. Hussain, Majid: *World Geography*; Rawat Publication, 2012.
7. Hussein, Majid., *Indian and World Geography*, 5<sup>th</sup> Ed. TataMcGrah Hills, New Delhi, 2020
8. Sharma, Vivek and Singh, Deepika, *Magbook India and World Geography*, Arihant Publications, 2020
9. Simon Adams: *Geography of the world*; Dorling Kindersly, 2006.

## Map Projection-II (Practical)

### Credit- V

1. Cylindrical equal area projection Mercator's (UTM) (Two exercises)
2. Polyconic Projection: (Two exercises)

### Credit- VI

1. Conical projection with one and two standard parallels (Two exercises)
2. Bonne's Projection (Two exercises)

### Suggested Readings:

1. Robinson, A.H et al., *Elements of Cartography*, John Wiley & Sons, U.S.A., 1995.
2. Sarkar, A.K., *Practical Geography: A Systematic Approach*, Oriental Longman, Calcutta, 1997.
3. Singh, R.L and Dutt, P.K., *Elements of Practical Geography*, Kalyani Publishers New Delhi, 1979.
4. Gopal Singh, *Map World and Practical Geography*, Vikas Publishing House, 2000.
5. Khullar, D.R., *Essentials of Practical Geography*, New Academic Publishing Co., Jalandhar, 2013.







## Geography of India & Field Tour

**Course Outcome:** The main objective of this course is aimed at making the students to gain In-depth knowledge of physiography, climate, demography natural vegetation, agriculture energy resources and industries of India. It also broadens understanding of students with respect social, cultural and ethno-linguistic profile of India. This course has been conceptualized to address the requirements of a large segment of students interested in various competitive examinations. Students will acquire knowledge regarding the use of modern tools and technology like remote sensing in geographical studies and can apply this knowledge in any field of study. The Students can acquire a broad knowledge regarding natural resources, various sensors and can developed idea about aerial photographs, satellite imagery etc. Through this course students can develop their base regarding the practical use of advanced technology in different field of geography through which they can prepare more accurate and precise maps of different cultural and physical features.

### Credit -I

1. Physiographic Divisions
2. Drainage systems: Himalayan and Peninsular Rivers
3. Climate: General Climatic Conditions and Climatic Regions
4. Monsoons: Classical and Modern theory

### Credit –II

1. Major Soil groups and their distribution
2. Vegetation and types
3. Land Resources: Land use and Land cover
4. Water resources – Strain and Strategies with special reference to Rain water Harvesting.

### Credit –III

1. Distribution and Production of Mineral resources: Iron Ore and Mica
2. Distribution and Production of Energy resources: Coal and Petroleum
3. Population: Distribution, Density and Growth
4. Demographic Characteristics: Sex Ratio, Age Structure and Demographic dividend

### Credit – IV

1. Indian Agriculture- Characteristics
2. Distribution and Production of Food crops: Rice, Wheat and Maize
3. Distribution and Production of Commercial crops: Sugarcane, Cotton, Tea and Jute
4. Major Industrial Regions

### Credit- V Local Field Tour

1. Understanding of Geophysical and Socio economic setup of the area (One Week Field Tour within J&K)

### Credit- VI

2. Report writing
3. Submission and Presentation

### Suggested Readings:

- 1) Drew, F. K., *The territories of India, Kashmir State. Standard Press London. 1979*
- 2) *Gazetter of Kashmir and Ladakh. (1890) Reprint (1974)*
- 3) Lawrence, S.W. *The Valley of Kashmir, Oxford University Press. 1895*
- 4) Raina, A.N. *Geography of Jammu and Kashmir. National Book Trust, New Delhi, 1971.*
- 5) Spate, O.H.K., *India and Pakistan, Mac Million & Co. 1967.*
- 6) Singh, R.L., *India, Regional Geography, Banarus Hindu University, 1987*
- 7) Qazi, S.A., *Geography of India with special reference to J&K State, APH Publishing Co. 2000.*
- 8) Majid Hussain, *Systematic Geography of Jammu and Kashmir, Rawat Publications 2000*
- 9) R. L. Singh, *India- A Regional Geography, National Geographical Society of India 2003*
- 10) Chandra Vijay Purty, *Geography of India, ABD Publishers.*
- 11) Majid Hussain, *Geography of India, 2nd Ed. Tata Mcgraw Hill, 2011*
- 12) D.R Khullar, *India- A Comprehensive Geography, Kalyani publishers, New Delhi, 2011.*
- 13) Husain M., *Geography of India, Mc Graw Hill Publications, U.P., 2017.*
- 14) Kaul A. K., *Studies In Geography of Jammu & Kashmir, Rawat Publications, Jaipur 2014.*



## Introduction to Disaster Management

**Course Outcome:** This course focuses on the basics of disaster management. The students are expected to gain comprehensive knowledge about the various types and processes of disasters, early warning systems, various preparedness and mitigation strategies.

### Credit-I

1. Introduction to Hazard and Disaster
2. Introduction to Geo-Physical Disasters
3. Earthquakes
4. Landslides

### Credit –II:

1. Introduction to Hydro-meteorological Disasters
2. Flood and flash Flood
3. Droughts
4. Introduction to Man-Made Disasters-Nuclear, Chemical Disasters and Biological

### Credit –III:

1. Meaning and Scope of Disaster Management
2. Elements of Disaster Management
3. Concept of Risk and Vulnerability
4. Perception and indicators of vulnerability

### Credit –IV:

1. Disaster Management Cycle – mitigation, preparedness, recovery, response, reconstruction and rehabilitation
2. Disaster Management Act 2005
3. National Policy on Disaster Management
4. Sendai Framework

### Disaster Management Tutorials

### Credit- V

1. Case study on Floods and Snow Avalanches (J&K)

### Credit- VI

1. Case Study on Earthquakes and Landslides (J&K)

### Suggested Readings

1. Bryant Edwards 2005. *Natural hazard*, Cambridge university press
2. G. K. Gosh *Disaster Management* APH Publishers
3. Rajesh K Yadav et al *Encyclopedia of Disaster and Hazards Management* Oxford Book Company
4. A. Vogelbacher 2013 [Flood Disaster Risk Management - Hydrological Forecasts - Requirements and Best Practices : Training Module](#)
5. *Hydro-meteorological Hazards* [www.nidm.gov.in](http://www.nidm.gov.in)
6. *Geokogical Hazards* [www.nidm.gov.in](http://www.nidm.gov.in)
7. Donald Hyndman and David Hyndman 2009 *Natural hazards and disasters...* Brooks/cole.
8. Edward A. Keller and Robert .H. Blodgett. 2008 *Natural hazards..* Pearson Prentice hall.



## Geography of Tourism

**Course Outcome:** To study the relationship of geography and tourism. To prepare learners with knowledge and skills those are essential to understand and manage the needs of destination. Develop strategies for on-going personal and professional development as a recreation and leisure services professional. To facilitate the assessment of the tourism potential of a destination and prepare tourism development plan as well as marketing techniques.

### Credit-I:

1. Definition and Scope of Tourism Geography
2. Components of Tourism
3. The use of Geographical Resources for Tourism
4. Butlers Theory of Tourism Development

### Credit-II:

1. Types and Forms of Tourism
2. Concept of Carrying Capacity
3. Sustainable Tourism
4. Environmental Impacts of Tourism

### Credit-III:

1. Tourism Planning
2. Infrastructure and Support System
3. Accommodation Types
4. Social and Cultural Impacts of Tourism

### Credit-IV:

1. Characteristics of Indian Tourism
2. National Tourism Policy
3. Problems and Prospects of Indian Tourism
4. Tourism Potential of Jammu and Kashmir

### Tutorials

### Credit-V:

1. Significance of Tourism in J&K.
2. Tourist Flow and Distribution Pattern
3. Pilgrimage Tourism
4. Adventure Tourism in Jammu and Kashmir
5. Problems and Prospects of Tourism in J&K

### Credit-VI:

1. A case study of Gulmarg
2. A case study of Pahalgam

### Suggested Readings:

1. S. N. Singh, "Geography of Tourism and Recreation", New Delhi, 1954.
2. S. C. Chandra, "Geography of Tourism". Rawat Publications, New Delhi 2002.
3. P.C. Sinha, "Eco-tourism and Mass tourism".Allahabad 2005.
4. M. Simith and Nichola Macleod, "Key Concepts in Tourist studies". 2010
5. B.s. Badan, "Tourism in India", Mumbai,1998.
6. A.C Singh & P.S. Rana, "Tourism Geography",Patna 2006.



## Regional Planning and Development

**Course outcome:** The course comprises of four credits. The course explores the current context and content of regional/spatial planning from perspective of developing countries and also investigates underlying theoretical debates. Course is designed to analyse the existing spatial distribution and exploitation pattern of regional resource structures, levels of sectoral development, regional imbalances and sustainable regional developmental strategies to address the issues of regional imbalances and disparities. The focus of the course is to impart knowledge, understanding and skills necessary to practise professionally as a regional/spatial planner. Course enables the students to formulate/prepare short term regional developmental plans at micro-spatial scale.

### Credit-I

1. Concept of Region
2. Types of Regions
3. Approaches to Delineation of Region
4. Relevance of Regional Planning in Regional Development

### Credit-II

1. Planning Processes: Concept
2. Types of Planning a) Sectoral and Spatial
3. Short Term and Long Term planning
4. Concept of Multi-Level Planning -Approaches

### Credit III

1. Regional Planning in India-History
2. Significance of Regional Planning in India
3. Achievements of Regional Planning in India
4. Macro, Meso and Micro Planning Regions of India

### Credit-IV

1. Concept of Growth and Development
2. Major Components of Development
3. Indicators of development
4. Human Development Index – Concept and construction

### Tutorials

### Credit- V

Human Development Index.

### Credit-VI

Delineation of Planning Regions

### Suggested Readings:

1. Agarwal, A.G., *Urban and Regional Models in Geography and Planning*, John Wiley and Sons, 1974.
2. Campbell, S. and Frankenstein, S., *Planning Theory*, Blackwell Publishers, 1997.
3. Campbell, S., and Feinstein, S. *Readings in Planning Theory*, Blackwell Publishers, 1997.
4. Carter, Harold., *The Study of Urban Geography*, Edward Arnold Publishers Ltd., 1982.
5. Chadwick, George., *A Systems view of Planning*, Pergamum Press Oxford, New York., 1978.
6. Clout, H.D., *Rural Geography*, Pergamum Press Oxford, New York. 1984.
7. Gary Hack, et al. *Local Planning: Contemporary Principles and Practice*, Oxford Press London, 2009.
8. Heredero, J.M., *Rural Development and Social Change*, Monahan Press Gujarat, 1979.
9. Hugget, Richard., *System Analysis in Geography*, Clarendon Press Oxford, 1980.
10. Issard, Walter., *Methods of Regional Analysis*, The M.I.T Press, 1976.



## Geography of Jammu and Kashmir & GIS

**Course Outcome:** This course introduces the students to the distinct geographical characteristics of the Jammu & Kashmir. It provides the necessary inputs to the students belonging to various disciplines of earth and environment sciences to explore their interests within the broad geographical domain of the UT. This course has been conceptualized to address the requirements of a large segment of students interested in various competitive examinations. The student is professionally well equipped to work independently or in team for providing solutions to problems in a GIS environment.

### Credit-I Physical Setting

1. Physical Divisions
2. Drainage - Indus Jhelum and Chenab
3. Climate
4. Vegetation

### Credit- II Demography

1. Population Growth since 1901
2. Population Distribution and Density
3. Age Structure
4. Sex Ratio

### Credit- III Economy and Society

1. Agriculture with special reference to Horticulture and Saffron (J&K)
2. Tourism industry – significance and prospectus
3. Adventure tourism
4. Industries – Handicraft and Cement Industry

### Credit-IV Resources

1. Mineral Resources
2. Water Resources
3. Forest Resources
4. Hydroelectricity power potential of J&K

### Suggested Readings:

1. Drew, F.K., *The Territories of India, Kashmir State*. Standard Press London, 1979.
2. *Gazetter of Kashmir and Ladakh*, 1890.
3. Lawrence, S.W., *The Valley of Kashnir*, Oxford University Press, 1895.
4. Raina, A.N., *Geography of Jammu and Kashnir*, National Book Trust, New Delhi, 1971.
5. Qazi, S.A., *Geography of India with Special Reference to J&K State*, APH Publishing Co. 2000.
6. Majid Hussain., *Systematic Geography of Jammu and Kashmir*, Rawat Publications, 2000.
7. R. L. Singh., *India- A Regional Geography*, National Geographical Society of India, 2003.

## GIS (Practical)

### Credit-I

1. Geo-referencing and Map registration
2. Digitization
3. Non spatial data and attribute tables

### Credit- II

1. Analysis and manipulation of spatial and attribute data
2. Thematic map preparation
3. Layouts and Visualization

### Suggested Readings:

1. Kumar, S., *Basics of Remote Sensing and GIS*, Laxmi Pub, 2005.
2. Lo, C.P. and Yeung AKW., *Concepts and Techniques of GIS (2nd ed.)*, Prentice Hall of India, New Delhi, 2006
3. Leick, A., *GPS Satellite Surveying (2<sup>nd</sup> ed.)*, John Wiley and Sons, New York, 2003.
4. Lillesand T.M and Keifer R.W., *Remote Sensing and Image Interpretation (6th ed.)* John Wiley and Sons, New York, 2008.
5. N. K. Agarwal., *Essentials of GPS*, Spatial Network Pvt. Ltd, 2004.
6. Sabins, J.F.F., *Remote Sensing: Principles and Interpretation*, W.H. Freeman & Co., New York, 1997
7. Sabins, F.F., *Remote Sensing: Principles and Interpretation*. Freeman, New York, 1986.
8. Siegal, B.S. and A.R Gillespie., *Remote Sensing in Geology*, Wiley, New York, 1980



## Political Geography

**Course Outcome:** This course provides students with a comprehensive understanding of the concepts, theories, methods, principles and models of geographic thought appropriate for analysing politics and political relations. This course enables students to use geography in order to gain an understanding of global political actions, related military, ethnic, or religious conflicts, cultural practices, economic relationships, and resource use decisions with interregional or international implications.

### Credit I

1. Scope and content of Political Geography
2. Approaches to study of Political Geography
3. Geopolitics- Definition and Scope
4. Relation of Geopolitics to Political Geography

### Credit II

1. Definition and Elements of State
2. Classification of State
3. Location, Characteristics of State
4. Concept of Nation and Nation State

### Credit III

1. Concept of Frontiers
2. Classification of Frontiers
3. Concept of Boundaries
4. Classification of Boundaries

### Credit IV

1. Heartland Theory of Mackinder
2. Rimland Theory of Spykman
3. Geopolitics of Climate Change
4. Geopolitics of World Resources

### Tutorials

### Credit V

1. SAARC

### Credit VI

1. ASEAN

### Suggested Readings:

1. Agnew J., *Political Geography: A reader* London: Arnold, 1997.
2. Cox KR, Low M. & Robinson J., *Handbook of Political Geography*, London, 2008.
3. Edward, F., *Modern Political Geography*, Brown Company Publishers, 1975.
4. Harvey, D., *Justice, Nature and the Geography of difference*, Oxford Blackwell, 1996.
5. Hussain, M., *Political Geography*, Anmol Publishers, New Delhi, 1994.
6. John Agnew, *Political Geography Reader*, Arnold Hodder, 1995.
7. Johnston, R.J., *Political, Electoral and Spatial Systems* Oxford: Clarendon Press, 1979.
8. Painter, J., *Politics, Geography and 'Political Geography': A Critical Perspective* London, 1995.
9. Peter, J. Taylor., *Political Geography*, Long man Group, England, 1985.
10. Spykman, N. J., *The Geography of the Peace*, New York: Harcourt, Brace and Co.1944.
11. Sutton, I., 'The Political Geography of Indian Country' *American Indian Culture and Research Journal*, 1991
12. Taylor P.J & Flint C., *Political Geography: World-Economy, Nation-state and Locality*, Harlow: Pearson Education Limited, 2007



## Disaster Profile of India

*Course Outcome: This course focuses on the disaster Profile of India. The students are expected to gain comprehensive knowledge about the early warning systems, various preparedness and mitigation strategies.*

### Credit I

1. Hazard and Vulnerability profile of India.
2. Multi hazard zones of India.
3. Earthquake vulnerability scenario of Himalayan cities.
4. Drought scenario of India.

### Credit II

1. Landslides- Implications and zonation in Northern India.
2. Cyclones and their implications in coastal India.
3. Tsunami exposure Scenario of India.
4. Flood Scenario of India

### Credit III

1. Earthquake distribution and zonation.
2. Evolution of disaster management in India.
3. Policy and programmers for disaster in India.
4. Roles and responsibilities of Panchayat, urban and local bodies in disaster management

### Credit IV

1. National Guidelines and plans on Disaster Management.
2. Disaster communication system ( early warning and its Dissemination)
3. National policy on disaster management.
4. Disaster safe designs and constructions.

### Tutorials

### Credit V

1. Flood Assessment of Valley

### Credit VI

1. Land Slides on National Highway

### Suggested Readings:

1. Anil K. Gupta, 2016, *Resource Book on Chemical (Industrial) Disaster Management*
2. Bryant Edwards, 2005, *Natural Hazard*, Cambridge University Press.
3. Donald Hyndman and David Hyndman, 2009, *Natural Hazards and Disasters*, Brooks/Cole.
4. Edward A. Keller and Robert .H. Blodgett, 2008, *Natural Hazards*, Pearson Prentice Hall.
5. G. K. Gosh, *Disaster Management*, A.P.H. Publishers.
6. *Geological Hazards* www.nidm.gov.in
7. *Hydro-meteorological Hazards* www.nidm.gov.in
8. K. K. Singh, Lotfi Aleya and Vinod Singh, *Disaster Management*, Motilal Banarsidass Publishers Private Limited.
9. Rajesh K. Yadav et. al. *Encyclopedia of Disaster and Hazards Management*, Oxford Book Company
10. Vogelbacher, 2013, *Flood Disaster Risk Management - Hydrological Forecasts - Requirements and Best*





## Urban Geography

**Course Outcome:** The course comprises of two credits which allows students exposure to the emerging urban scenario at national and international level. Indian cities are growing at a rapid pace in terms of their demographic and spatial size and functional activities. Urban growth has been lopsided one skewed in favour of large metropolitan cities associated with serious environmental problems. They need constant attention for their future expansion and management to improve liveability. This course helps students to develop professional capacities and skills to address these complex problems like delimitation of city limits and influence areas, land use planning with a focus on locational planning of urban utilities, preparation of town plans and spatial analysis of environmental problems to improve quality of urban life.

### Credit I

1. Urban Geography: Introduction, Nature and Recent Approaches
2. Location and growth of Cities.
3. City Classification Schemes: Houston, Taylor, Lewis Mumford, Functional Classification
4. Urbanization Growth – Trends & Patterns.

### Credit II

1. The internal structure of cities
  - The Concentric Zone Theory
  - The Sector Theory
  - Multiple Nuclei Theory
  - The Social Area Analysis Model & Exploitative Model

### Credit III

1. Primate City and Rank Size Rule
2. Central Place Theory of Christaller
3. Central Business District: Delimitation and Characteristics
4. Rural Urban Fringes: Delimitation and Characteristics

### Credit IV

1. Urban Sprawl: Characteristics and Causes
2. Urban Poverty and Housing: Slums and Squatter Settlements
3. Urban Environmental Problems: Urban Heat Island Effect, Solid Waste Pollution
4. Concept of Green Belt, Satellite Town, Ribbon Settlement, Conurbation.

### Tutorials

### Credit V

1. Urban Slums in Srinagar City

### Credit VI

2. SDA's Master Plan 2035

### Suggested Readings:

1. David, Herbert., *Urban Geography – A Social Perspective*, David and Charles, Newton Abbot London- Vancouver, 1972.
2. Gans J. Herbert., *The Urban Villagers: Group and Class in the Life of Italian-Americans*, Blackwell Publications, New York, 1982.
3. Hall, Tim., *Urban Geography*, Routledge Contemporary Human Geography Series, 2011.
4. Kaplan, D.H, and Hollaway Steven., *Urban Geography*, Wiley Publishers, 2012.
5. Knox, Paul L., and McCarthy, Linda M., *Urbanization: An Introduction to Urban Geography*, Pearson New International Edition, 2011.
6. Laves, Lowenstein K., *Urban Studies – An Introductory Reader (2nd Edition)*, the Free Press Collier Macmillan Publisher, Third Avenue, New York, 10022, 1977.
7. Mandal, R.B., *Urban Geography – A Text Book*, Concept Publishers, New Delhi – 110054, 2001
8. Markanday, K and Reddy G., *Urban Growth Theories and Settlement Systems of India*, Concept Publishing Company, 2011.
9. Mehta, A., *Economic theory and Planning*, University Oxford Press, 1974.
10. Pascoe, M., *Urban Geography– A Global Perspective*, Rutledge, New Fetter Lane, London. 2001
11. Peter Geoffrey Hall., *Cities of Tomorrow: An Intellectual History of Urban Planning and Design in the Twentieth Century*, Willey Blackwell, London. 2011
12. Philipp Rode., *Governing Compact Cities*, Blackwell publishers, 2011
13. Ray, N. M., *Urban Geography (2nd Edition)*, John Willey and Sons, 1979.
14. Siddhartha, K and Mukherjee, S., *Cities, Urbanization and Urban System*, Kasalaya Publications, New Delhi, 2001.
15. Siddhartha, K., *Models in Regional Planning*, Kasalaya Publications, New Delhi, 2008.
16. Verma, L.N., *Urban Geography*, Black Swan Publications, New Delhi, 2001.
17. Weng, Qahio and Quattrochi, D.A., *Urban Remote Sensing*, CRC Press, Taylor and Francis Group, London, 2007.
18. Wilson, A.G., *Urban and Regional Models in Geography and Planning*, John Willey and Sons, London. 1975.



## Social and Cultural Geography

**Course Outcome:** This course provides a broad overview of the key concepts and approaches in social and cultural geography and examines the contested politics of place-making as a social and cultural practice. This course also enables the students to explore the relations between social identity and the production of geographical space and critically analyse and contribute to contemporary scholarship in social and cultural geography. This course is aimed at making students understand and develop the ability to critically assess the material and symbolic aspects of cultural landscapes.

### Credit I

1. Introduction to Social Geography.
2. Development of Social Geography in India.
3. Relation of social geography with other social sciences.
4. Social segregation

### Credit II

1. Social region- concept and formation.
2. Evolution of socio-cultural regions of India.
3. Basis of social region formation (role of race, caste, tribe, language and religion).
4. India- unity in diversity

### Credit III

1. Concept of social wellbeing.
2. Physical quality of life.
3. Human development- concept and measurement.
4. Rural urban variation in education and health care

### Credit IV

1. Introduction to Cultural Geography.
2. Cultural Region- Concept and Characteristics.
3. Cultural Evolution.
4. Cultural diffusion - Acculturation, assimilation

### Tutorials

### Credit V

1. Social Segregation and Social Morphology in Srinagar
2. Rural-Urban Variation in Education and Healthcare in Kashmir Valley

### Credit VI

1. Cultural Differentiation and Acculturation in Kashmir Valley
2. Quality of Social life in Kashmir Valley

### Suggested Readings:

1. Jones Emrys, and Eyles John., *An Introduction to Social Geography*, Oxford University Press, 1977.
2. Aijazuddin Ahmed., *Social Geography*, Rawat Publications, New Delhi, 1999.
3. Smith David., *Geography - A Welfare Approach*, Edward Arnold, 1977.
4. Knox P. L., *Social Well-being: A Spatial Perspective*, Oxford University Press, London, 1975.
5. Crong Mike., *Cultural Geography*, Routledge Publications, London, 1998.
6. Jordan and Lester, G., *The Human Mosaic Harper Row*, New York, 1978.
7. Massey et a., *Human Geography today*, Polity Press, Cambridge, 1999
8. Mukerjee, A. B. & Aijazuddin Ahmed., *India Culture Society's Economy*, Inter India Publications, New Delhi, 1985.
9. Delhi, 1985.